

of plants, we can look over the broad battlefield of biology, and see the vast territories which have been conquered, then relinquished in turn by mosses and fungi, pteridophytes, cone-bearing plants, endogens, apetalous and polypetalous exogens, and now are largely held by today's victors, the gamopetalous dicotyledons. We can see how the hardy pines have fought stubbornly for centuries, yielding ground only inch by inch to the endogens, the secret of whose final victory was that, Niobe-like, they protected their children though perishing themselves. We can see too how these children have been driven to the marshes, windswept plains, and cold mountain hills by the onslaughts of their more completely armed younger brothers, who, leagued with the great insect kingdom, are carrying all before them.

That will be a view well worth looking at and the sooner we begin the climb to the high ground, the better. The botany of the past is a most vital part of the botany of today. Zoölogy must join hands with us. We are dependent on each other. Distribution, genealogy, and environment will enter largely into the manuals of the future. Then the touch of nature which makes the whole world kin will be added to the long Latin names and mechanical descriptions.

[The foregoing paper was prepared at Mt. Holyoke Seminary and College, S. Hadley, Mass.]

*Ithaca, N. Y.*

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### F. W. Anderson, Sc. D.

F. D. KELSEY.

(WITH PORTRAIT.)

This rising young botanist died in New York city on Dec. 22, 1891 from an abcess on the brain. He was especially known as an independent and indefatigable worker upon our Montana flora. Gone is he, no more to roam with me our Montana plains, no more to climb these mountains, no more to sit beside me in my study gazing through my microscope to discover Nature's secrets, no more to use his skilful pencil in catching upon paper the singular beauties of plant structure; gone while we are mutually planning for many more years of service together in our beloved science; gone, adding one more to the mysteries of divine providence; which so often removes those that seem indispensable.



He was born at Wisbech, Eng., June 22, 1866. In 1881 the family removed to Chicago and in 1883 he came to Montana and began his brief but brilliant career in the study of the Montana flora. In 1888 he met at Great Falls, Montana, Hon. N. J. Colman, then United States Commissioner of Agriculture. At the same time also he met the then editor of the *American Agriculturist*, the Hon. Mr. Martin, who became so attached to him that the love became as a father for a son. From this time, Mr. Anderson's life was spent in Washington, at Newfield, N. J., with Mr. J. B. Ellis, or at New York at work upon the *Agriculturist*. He was beginning to publish botanical articles quite largely and venture upon revisions and description of new species.

Mr. Anderson was an example of what can be accomplished by a man of one idea. From earliest childhood he manifested a liking for scientific pursuits. For the love of botany he surrendered in later years all thought of ease, wealth or comfort. It was heaven for him to botanize; woe was it for him to be forced to do anything else.

His honored father who survives him is a clergyman, and, like all clergymen, knows what a perplexing problem it often is to make the unknown " $x$ " in the yearly equation a plus quantity. Of course, his son Fred was too much of a man to allow himself to be a burden upon the struggling father. Hence he often endured poverty rather than give up his botanical investigations.

His energy was intense, and in the freedom of my intimate relationship with him I dubbed him my "night owl"; many a time forcing him to rest long before he himself would have surrendered to sleep.

The College of Montana at Deer Lodge in June, 1890, conferred upon him the degree of Doctor of Science, in acknowledgement of his valuable services in investigating the flora of our state. This was an honor of which he knew nothing until it was thrust upon him.

The agricultural department at Washington, through Mr. Galloway and Mr. Martin, put him at one time to active service at Washington where he remained until he entered the service of Mr. J. B. Ellis, the distinguished mycologist, of whom Mr. Anderson published a biographical sketch in the *GAZETTE* for October, 1890. He was engaged while at Newfield in making the microscopical drawings for Mr. Ellis for



his forthcoming work on the "North American Pyrenomycetes." Upon completing his work for Mr. Ellis he was engaged upon the editorial force of the *American Agriculturist* at New York. Upon taking up his permanent residence at New York, he was elected to membership in the Torrey Botanical Club whose meetings were to him a constant delight. At this time he published, jointly with myself, a pamphlet entitled: "Common and Conspicuous Algae of Montana." This was a reprint from the Bulletin of the Torrey Botanical Club.

He began his botanical publications by sending to the BOTANICAL GAZETTE short field notes and observations from Montana, and later published observations upon our Montana fungi. His articles have most of them been short and crisp, giving promise of far greater effort in the near future. He was especially skillful in drawing and was at the time of his death engaged upon drawings for Mrs. E. G. Britton's proposed work on the mosses of the northeastern United States. In Dr. Geo. Vasey's "Report of the botanist" for 1888 is incorporated a very valuable essay of fourteen octavo pages on the pastoral resources of Montana by Mr. Anderson. It does not pretend to be a complete list of forage plants in Montana, but it does describe well the usual and profitable forage of this country. He had a remarkable talent for making such a list very interesting reading even for the unprofessional. In the same report can be seen three of his drawings, viz: *Plantago Patagonica*, var. *gnaphalioides*; *Lygodesmia juncea*; and *Solanum triflorum*.

Mr. Anderson is also a valuable example of what a poor boy, without special scientific education, without instruction in a university, with a delicate and treacherous constitution, with poverty always dogging his steps, can do in a short but earnest youth.

Two things he loved with great enthusiasm, good books and botanical novelties. For the books I have seen him spend every cent he possessed; for the other no mountain was too steep, no distance too great, no weariness too distressing for him to endure, that he might lay his hands upon a new flower or grasp a new fungus. He seemed to know by instinct where to find a treasure. The inspiration of his botanical knowledge was intensified by the fact that he gained his knowledge at first hand. He knew whereof he spoke or wrote. Moreover he was a close observer of nature and a diligent collector.



His friendships were keen and constant; slow to form an affection, but once formed they were warm and enduring. He sought his friendships among the good, the diligent and the lovers of nature. By us who knew him best his loss is most keenly felt, and the botanical world is the loser not only of the talent he had exhibited, but, prospectively, of the greater things which his short career promised.

*Helena, Montana.*

### Enumeration of the Kansas mosses.

F. RENAULD AND J. CARDOT.

Kansas, and chiefly the central part of this state, is certainly one of the regions the most destitute of mosses of any part of the United States: the atmospheric dryness, a climate extensively variable and liable to extremes of temperature and the extension of cultivated and meadow lands are the causes of the poverty of this bryological flora. For a long time it was a common belief that this land was almost entirely destitute of mosses; but it has been proved by recent researches that such is not the case, and if the moss-flora of this country is very poor in comparison with that of other states it includes, however, a relatively important number of species. The most part of these, however, grow in meagre, stunted and sterile specimens, which often makes their determination very difficult.

In 1884-85-86 Mr. Eugene A. Rau published in the *Bulletin of the Washburn College Laboratory of Natural History* four contributions to the knowledge of Kansas mosses, including a total of fifty-three species, collected chiefly by Prof. F. W. Cragin, Miss Mara Becker and Mr. Joseph Henry. The last, who died on October 12, 1887, aged more than 74 years, sent us during the year 1885 and until his death, all the species he had collected in Saline county, and by the study of this collection we are able to add nearly forty species to those previously reported by Mr. Rau.

The present catalogue includes all the mosses recorded in the four lists published by this bryologist and all those that we received from Mr. Jos. Henry. Several of these re-